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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/806,543      | 03/23/2004  | Susanne Arney        | 11-23-24-16-2-14    | 2493             |

7590 04/28/2005

Docket Administrator (Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

YU, MELANIE J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1641

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/806,543

Applicant(s)

ARNEY ET AL.

Examiner

Melanie Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-6 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/20/06 6-16-04  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's amendment filed 14 March 2005 has been entered. Claims 7-17 have been canceled.

#### ***Election/Restrictions***

2. Applicant's election of group I, claims 1-6, in the reply filed on 14 March 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

#### ***Information Disclosure Statement***

3. The references not considered on the information disclosure statement filed 23 March 2004 have not been considered because the patent application references are not published, documents must be published patents or patent applications.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites a "first reagent pixel", which are vague because it is unclear what this phrase encompasses. It is unclear whether a first reagent pixel is any reagent, and whether the location or size of the reagent defines a reagent pixel. The phrase "droplet of liquid" is vague

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and indefinite because it is unclear what a droplet encompasses. It is unclear whether the amount of liquid defines a droplet or how much liquid must be present for a liquid to be a droplet.

Regarding claim 2, it is unclear whether the means for moving a first droplet of liquid is intended to comprise movement due to the density of nanostructures or if the liquid is merely intended to move by any means towards a surface having a highest density of nanostructures.

Claim 4 recites a first droplet being a droplet of reagent. It is unclear if the first droplet being a droplet of reagent is the same as the first reagent pixel. It is vague as to whether the droplet and pixel are the same reagent or whether both are reagents comprising different substances.

Regarding claim 5 the adaptation of the plurality of nanostructures to absorb particles disposed on the tips does not appear to require any further product limitations. It is unclear what further product limitations would be required to absorb particles on tips of a plurality of nanostructures. Therefore, any detector comprising the limitations of claim 1 and a first droplet, is capable of being adapted to absorb particles disposed on the tips of a plurality of nanostructures.

With respect to claim 6, the phrase "such as" is vague and indefinite because it is unclear whether the transportation of a droplet to a reagent pixel in an array of reagent pixels is claimed as part of the detector. Furthermore, the claim does not appear to provide any further product limitations for the detector, and would therefore not require any further product limitations other than those recited in claim 1. It is unclear what product limitations are required for the adaptation to transport particles to a reagent pixel in an array of pixels.

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5. Claim 2 recites the limitation "the density" in the second line of the claim, "the area" in the fourth line of the claim and "the highest density" in the fifth line of the claim. Claim 4 recites the limitation "the tips" in the second line of the claim. There is insufficient antecedent basis for these limitations in the claims.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 3-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Heller et al. (US 5,929,208).

With respect to claims 1 and 4, Heller et al. teach a detector comprising: at least a first nanostructured surface having a plurality of nanostructures disposed thereon (sub-micron range is 500 nm, which is a nanostructured surface, col.10, lines 13-23); at least a first droplet of liquid being a droplet of reagent (sample solution that is a reagent comprising target DNA, col. 17, lines 63-64); at least a first reagent pixel (specific binding entities at specific micro-locations, col. 10, lines 31-33; col. 15, lines 25-29; col. 16, lines 8-12); and means for moving the first droplet of liquid across the nanostructured surface in a way such that it contacts the first reagent pixel (col. 7, lines 7-17).

Regarding claim 3, Heller et al. further teach a means for moving that comprises a plurality of electrodes disposed on at least a first nanostructured surface (specific binding entities, reagent pixels, formed on nanostructured metal sites that serve as microelectrodes, col.

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10, lines 41-61), wherein upon sequentially applying a voltage to at least one of the electrodes in the plurality of electrodes, a droplet moves in a desired direction (analyte transferred to specific binding sites in DC mode, during which voltage is applied, col. 10, lines 33-39; col. 7, lines 7-17; col. 26, lines 13-15).

With respect to claim 5, Heller et al. teach a first droplet (col. 17, lines 63-64) and a plurality of nanostructures disposed on a nanostructured surface (col. 10, lines 13-23). The detector of Heller et al. teach the product limitations of the immediate claim, which would therefore be capable of adaptation to absorb particles on tips of the plurality of nanostructures.

Regarding claim 6, Heller et al. teach a first droplet further adapted to transport particles to a desired destination such as a desired reagent pixel in an array of pixels on the nanostructured surface (col. 10, lines 33-39).

7. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Lopez et al. (US 2002/0125192).

Lopez et al. teach a detector comprising: a first nanostructured surface having a plurality of nanostructures disposed thereon (par. 0021; 0037; 0060); a first droplet of liquid (molecular species, par. 0081); at least a first reagent pixel (monomolecular layers separated by nanostructured matrix, par. 0086); and means for moving the first droplet of liquid across the nanostructured surface in a way such that it contacts the first reagent pixel (molecular species traverses the gradient, par. 0076). Lopez et al. teach the means for moving comprises a plurality of nanostructures, wherein the nanostructures in the plurality of nanostructures is varied in a way such that the droplet of liquid moves toward the area on the nanostructured surface having the highest density of the nanostructures (Fig. 6 shows nanostructure density increasing from left to

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right, and flow of a sample toward a highest density of nanostructures on the right, molecular species driven in direction of gradient, par. 0076; 0081).

***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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04/28/05